Protecting the Food Supply

A biological attack against the nation's agricultural sector could result in a major public health crisis along with substantial economic and social disruption. The United States is currently unprepared for such acts of "agro-terrorism." Although a recent Presidential Directive establishes general guidelines for a national policy to defend against an agro-terrorism attack, it lacks specificity and falls short on implementation timeframes. The Administration should now move aggressively to develop a detailed national preparedness and response plan with meaningful action-oriented strategies and timeframes. Moreover, the Administration should strengthen inspection programs at food processing facilities and along our borders, as well as bolster the nation's disease surveillance capabilities.

Agricultural terrorism has received relatively little attention compared to other terrorist tactics, but the threat of these attacks by rogue factions is very real. Hundreds of pages of U.S. agricultural documents, translated into Arabic, were among the volumes of information left behind in al Qaeda caves after U.S. troop raids. A significant part of the group's training manual was reportedly devoted to the destruction of crops, livestock and food processing operations.[1]

Terrorists have already seen the ease of reaching a large volume of people through food contamination, both intentionally and unintentionally. In 1984, a cult group poisoned salad bars at Oregon restaurants with Salmonella bacteria, and 750 people fell ill. [2] In January 2003, the Centers for Disease Control and Prevention reported that 92 persons became ill after consuming beef from a Michigan supermarket that was contaminated with nicotine.[3]

Apart from the catastrophic loss of human life, a successful bio-assault on agriculture could significantly undermine the national economy and carry social consequences. The food industry comprises 13 percent of our GDP[4] and provides jobs to one in eight Americans.[5] Deliberate contamination of crops and/or livestock would result in direct financial losses to all participants in agriculture and food production. For example, the recent discovery of a single case of mad cow disease (which is not considered a disease likely to be used for an agro-terrorism attack) in the U.S. seriously damaged international trade in American beef. The 2001 outbreak of foot and mouth disease in the United Kingdom, caused by a highly contagious and easily introduced virus, cost that country more than $10 billion in economic losses.[6] Apart from immediate revenue losses, producers may lose future market shares if distributors, wholesalers, and retailers choose alternative suppliers.

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[1] Katherine McIntire Peters, "Officials Fear Terrorist Attack on U.S. Food Supply," *Govexec.com*, June 10, 2003, http://www.govexec.com/news/index.cfm?mode=report&articleid=25825.
[2] U.S. General Accounting Office (GAO), *Bioterrorism: A Threat to Agriculture and the Food Supply*, GAO-04-259T, (Washington, D.C: GPO, November 19, 2003), 4.
[3] Ibid.
[4] Ibid, 1.
[5] Peter Chalk, *Hitting America's Soft Underbelly: The Potential Threat of Deliberate Biological Attacks Against the U.S. Agricultural and Food Industry*, RAND (2004), ix.
[6] GAO, *Foot and Mouth Disease: To Protect U.S. Livestock, USDA Must Remain Vigilant and Resolve Outstanding Issues*, GAO-02-808, (Washington, D.C: GPO, July 26, 2002), 2.

The terror threat alone from even suspected contamination of the food supply could also cause economic disaster. In 1989, Chilean grapes were widely rumored to be laced with cyanide poison. Although no evidence was found, public fears cost the industry at least $210 million in damages.[7] Finally, panic and fear from an agricultural attack could lead to wide-spread social disruption and erosion of public confidence in the government's ability to protect the food supply.

Terrorists may find an attack on crops and livestock attractive because of its favorable cost-to-benefit payoff. A simulation of an intentional release of foot and mouth disease showed that a single truckload of contaminated hogs could spread disease to 25 states within five days before detection.[8] Infecting plants or animals with deadly disease is also cheaper than infecting humans directly. Since no major U.S. city has more than a seven-day supply of food, consumers would feel the impact of a terror attack almost immediately.[9] Moreover, the highly integrated nature of our food distribution system means numerous access points for terrorists as food travels from "farm-to-fork," moving thousands of miles and changing hands repeatedly.[10]

The Administration should address these threats to our agricultural sector and food supply.

SECURITY GAP: We Do Not Have A Comprehensive Agro-Terrorism Preparedness and Response Plan.

Over two and a half years after 9/11, the Administration has not developed a detailed national response strategy for preparing and defending the nation against agro-terrorism[11] and numerous gaps remain in our ability to rapidly and effectively respond to these kinds of attacks.[12] The current food safety system is still a confusing patchwork of different federal agencies, and layer of state programs, that continues to operate under disparate regulatory approaches in an uncoordinated fashion.[13] One assessment has estimated that more than 200 government offices and programs could be involved in responding to an animal-borne disease outbreak.[14]

The U.S. Department of Agriculture (USDA) and Federal Drug Administration (FDA) are principle among the myriad of federal agencies responsible for food safety and agro-terrorism. Now that a portion of USDA's Animal and Plant Health Inspection Service (APHIS) has been transferred to the Department of Homeland Security (DHS) under the Homeland Security Act of

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[7] Philip Hilts, "Don't Eat Grapes FDA Warns," *Washington Post*, March 14, 1989, sec. A1.
[8] Daniel G. Dupont, "Food Fears: The Threat of Agricultural Terrorism Spurs Calls for More Vigilance," *Scientific American*, October 2003, 22.
[9] Katherine McIntire Peters, "Officials Fear Terrorist Attack on U.S. Food Supply," *Govexec.com*, June 10, 2003, 2.
[10] Congressional Research Service (CRS), *Food Safety Issues for the 108th Congress*, RL31853, by Donna U. Vogt, January 6, 2004, 2.
[11] Corine Hegland, "Agriculture's Homeland Security Role Still in Seedling Stage, Observers Say," *National Journal.com*, January 9, 2004.
[12] Rocco Casagrande, "Biological Terrorism Targeted at Agriculture: The Threat to U.S. National Security," *The Nonproliferation Review*, (Fall-Winter 2000), 1-14.
[13]GAO, *Food Safety and Security: Fundamental Changes Needed to Ensure Safe Food*, GAO-02-47T, October 10, 2001, 3-10.
[14] Marilyn Werber Serafina, "Group Criticizes Public Health Leadership as Piecemeal, Haphazard," *Govexec.com*, January 14, 2004, http://www.govexec.com/news/index.cfm?mode=report2&articleid=27420.

2002, [15] the federal regulatory maze has become more elaborate. This underscores the need for the Administration to develop a detailed national plan for agro-terrorism.

Sustained fragmentation hampers the effectiveness of federal food safety efforts and causes confusion about which federal entity should take the lead in the event of an agro-terrorism incident. Moreover, lack of coordination between federal agencies, their state counterparts, and private industry also continues to hinder our ability to respond effectively to an act of agro-terrorism. For years, a detailed national plan has been needed to identify how interrelated agricultural health and emergency management functions will be coordinated to ensure an orderly, immediate, and unified response to an agro-terror threat.

Over two years after 9/11, and with the nation still severely unprotected against the agro-terrorism threat, on January 30, 2004, the President issued Homeland Security Presidential Directive (HSPD)-9.[16] This directive is a broad strategy which designates DHS as the lead agency for preventing and responding to acts of agro-terrorism and generally describes national goals and DHS' relationships with other federal agencies and state and local stakeholders.

Issuance of HSPD-9 was a much needed step. But the general nature of its guidance and lack of meaningful goals and timelines demonstrate that – consistent with the overall lack of action up to now – more effective and specific action is needed to fully prepare for possible acts of agro-terrorism.

SECURITY RECOMMENDATION

The Administration should move forward vigorously to develop a detailed national preparedness and response plan to combat agro-terrorism. The plan should include specific strategies and timeframes for vulnerability and response assessments and preparedness evaluations.

SECURITY GAP: Border and Facility Inspections Are Inadequate.

Defense against agricultural terrorism begins at the border, where the introduction of contaminants can be stopped. But inspection at U.S. borders remains weak, with the FDA inspecting only 2 percent of food imports under its jurisdiction.[17]

One specific concern is the absence of a plan for retaining sufficient agriculture specialist positions. DHS established these positions as part of its "One Face at the Border" initiative to retain experience in handling the complex laws, regulations, and science involved in agriculture inspections. These agricultural specialists transferred to DHS from USDA and are critical to maintaining the integrity of our food supply because they monitor the quality of produce imported from other countries. Under the initiative, DHS plans to offer agriculture specialists the opportunity to transfer to officer positions within the Bureau of Customs and Border Protection (CBP). According to interviews with a sample of agricultural specialists, an estimated 50 to 75 percent of them would choose to transfer-- and all cited "more career advancement opportunities"

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[15] Homeland Security Act of 2002, §421 (P.L. 107-296).
[16] Homeland Security Presidential Directive/HSPD-9, http://www.whitehouse.gov/news/releases/2004/02/20040203-2.html.
[17] Jason Peckenpaugh, "No Retraining for Agricultural Inspectors in Border Agency Plan," *Govexec.com*, October 29, 2003.

as the reason they would transfer, if permitted.[18] However, the Administration has not filled all of its current authorized agriculture specialist positions, let alone developed plans to fill the positions that could be vacated by those choosing to move to CBP Officer positions.[19] Nor has it announced policies or timeframes governing the transfer of agriculture specialists to CBP. A massive transfer of specialists could potentially create a huge gap in our ability to inspect agriculture shipments coming across our borders.

Weaknesses also persist at the thousands of food processing and packing plants across the country. Basic security is poor, personnel are transient and rarely screened, and inaccurate or nonexistent record keeping make tracing contaminated food complicated and time-consuming. Moreover, inspectors are not always adequately trained or equipped with "state-of-the-art" detection technologies. Many small-scale processing plants do not keep accurate records of their distribution activities, which could make it difficult to trace a tainted food item back to its origin.[20] Inspection resources are still insufficient to meet the increasing demand. The Gilmore Commission concluded that USDA's one percent increase in inspectors is probably not enough to cover the thousands of facilities required.[21] Finally, while USDA and FDA have issued security guidelines for food processing facilities, these agencies lack the authority or the manpower to enforce their adoption.[22]

SECURITY RECOMMENDATION

USDA, FDA, and DHS should strengthen their inspection programs. Sufficient numbers of well-trained inspectors at agricultural and food processing facilities and at the nation's borders are essential. DHS should quickly develop contingency plans to address excessive transfers of agricultural inspectors to other units. The job of all inspectors will be made much easier with rapid, sensitive diagnostic techniques for pathogens—including the capability to recognize exotic animal and crop disease. The Administration should set priorities to foster research and development for such devices and techniques.

SECURITY GAP: Disease Surveillance Systems Are Weak.

- **Disease Detection and Reporting**

The ability to rapidly detect an agricultural disease outbreak is vital to minimizing harm to people, damage to the economy, and public concerns. Today, strong disease surveillance is

[18] Information obtained in minority staff interviews during site visits to borders in 2003.
[19] Based on figures provided to the Select Committee on Homeland Security, in correspondence dated October 4, 2003.
[20] Dr. Peter Chalk, "The Bio-Terrorist Threat to Agricultural Livestock and Produce" testimony before the Senate Governmental Affairs Committee, November 19, 2003, 5.
[21] Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction, *Forging America's New Normalcy*, December 2003, 38, http://www.rand.org/nsrd/terrpanel/.
[22] GAO, *Food-Processing Security: Voluntary Efforts Are Underway, but Federal Agencies Cannot Fully Assess Their Implementation*, GAO-03-342, (Washington, D.C.: GPO, February 124, 2003), 11-12.

hampered by farmers and ranchers unwilling to report disease for fear of economic losses and veterinarians unfamiliar with the signs of agro-terrorism.[23]

These limitations are aggravated by the limited capacity of our nation's animal and plant health laboratories. Too few of these facilities, crucial for accurate diagnoses, exist nationwide, and those that do have limited resources to receive, analyze, and identify many potential agro-terrorist agents.[24] For example, the National Animal Health Laboratory Network (NAHLN) remains in the pilot stage with laboratories in only 12 states.[25] Moreover, these laboratories cannot detect the full range of dangerous agents, lacking the capability to test for more than eight of the 37 foreign animal disease agents.[26] As a result, an outbreak of certain diseases might go unnoticed for long periods. In other instances, widespread outbreaks would quickly overwhelm laboratories or lead to misjudgments about the true extent of disease. While the Administration has requested $381 million in fiscal year 2005 to boost USDA spending to protect the nation against agro-terrorism, the majority of the request, $178 million, is for a single project, the National Centers for Animal Health in Ames, Iowa. Only $30 million is being requested for both plant and animal laboratory upgrades elsewhere. The American Association of Veterinary Laboratory Diagnosticians estimates that at least an additional $85 million above current funding is required to expand the network.[27] Communication and coordination between animal and plant health laboratories, clinicians, and producers is vital for determining and implementing appropriate and rapid response measures. Today, no such system exists for swift, integrated information exchange.[28]

SECURITY RECOMMENDATION

Financial risk management and insurance tools should be developed to compensate farmers and ranchers for the loss of livestock and crops caused by terrorism in order to encourage disease reporting. The federal government should partner with universities and the private sector to bolster the number of veterinarians and pathologists sufficiently trained to recognize exotic livestock and crop diseases.

The capacity of our nation's animal and plant health laboratories should be boosted. Sufficient funding should be provided to expand the NAHLN to include at least one laboratory in every

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[23] Dr. Peter Chalk, "The Bio-Terrorist Threat to Agricultural Livestock and Produce" testimony before the Senate Governmental Affairs Committee, November 19, 2003.
[24] Committee on Biological Threats to Agricultural Plants and Animals, National Research Council, *Countering Agricultural Bioterrorism*, (Washington, D.C.: National Academy Press, 2003): 6, 107-109.
[25] American Association of Veterinary Laboratory Diagnosticians, *National Animal Health Laboratory Network*, May 30, 2003, http://www.aavld.org/MainMenu2/NAHLN/NAHLN.pdf.
[26] (a) David Kinker, *National Animal Health Laboratory Network*, presented to the Secretary's Committee on Foreign Animal and Poultry Diseases, Riverdale, MD, February 4, 2004; (b) Committee on Foreign Animal Diseases of the United States Animal Health Association, *Foreign Animal Diseases*, 1998 Edition, (Richmond, VA: United States Animal Health Association, 1998), http://www.vet.uga.edu/vpp/gray_book/FAD/index.htm.
[27] American Association of Veterinary Laboratory Diagnosticians, *National Animal Health Laboratory Network*, May 30, 2003, http://www.aavld.org/MainMenu2/NAHLN/NAHLN.pdf.
[28] Committee on Biological Threats to Agricultural Plants and Animals, National Research Council, *Countering Agricultural Bioterrorism*, (Washington, D.C.: National Academy Press, 2003):6, 109-110.

state with the capability to conduct tests for the key agro-terror threat agents. The USDA should look to projects in public health, such as the Laboratory Response and the Health Alert Networks, as models for stronger laboratory communication and coordination.

- **Animal Disease Reporting**

Zoonotic diseases, caused by pathogens dangerous to humans but carried by animals, pose a particular risk to public health. The case of West Nile Virus, a mosquito born disease that can harm both people and animals is illustrative. In the summer of 1999, zoo and park workers noticed hundreds of dead crows and other birds in New York City parks. But public health officials were not aware of these events until after humans began to fall ill and die weeks later and initially dismissed that the two outbreaks could be linked.[29] Without better integration of animal and public health surveillance systems, responses to these diseases will continue to be managed in a piecemeal and uncoordinated manner.[30] However, few states have made efforts to strengthen links between their public health and animal surveillance systems.[31] Meanwhile, as noted above, state veterinary and NAHLN member laboratories lack the capability to test for deadly CDC category A and B zoonotic agents such as Rift Valley fever and glanders.

For fiscal year 2005, the Administration announced a "Bio-Surveillance Initiative," which would include new funding at USDA to improve animal surveillance and at DHS harvest and integrate this information with public health data. While a potentially useful step, it remains unclear whether a national, as opposed to regional architecture for this integration is optimal or whether DHS will have sufficient expertise to integrate animal and human health surveillance data and produce usable, actionable outcomes.

SECURITY RECOMMENDATION

Animal and human health tracking networks need to be integrated. Nationwide and regional web-based databases, constantly updated with new disease surveillance information, need to be established. Laboratories, infectious disease practitioners, and veterinarians should have access to these databases or a derivative alert system.

- **Food-Borne Illness Surveillance**

Surveillance is also the most important tool for detecting contamination of the food supply. A strong state and local public health infrastructure is critical to effective surveillance of foodborne illness, but the common reliance on passive surveillance, through which clinicians and laboratories report diseases only after they are confirmed, is slow, and can be ineffective because food-borne illnesses or often misdiagnosed or left undiagnosed. Active surveillance, which involves the direct soliciting of relevant health information from clinicians, is much more likely

[29] GAO, *West Nile Virus Outbreak: Lesson for Public Health Preparedness*, GAO/HEHS-00-180, (Washington, D.C.: GPO, September 2000).
[30] Trust for America's Health, *Animal-Borne Epidemics Out of Control: Threatening the Nation's Health*, August 2003, http://healthyamericans.org/reports/files/Animalreport.pdf.
[31] Janet Heinrich, Director of Public Health Issues, General Accounting Office, testimony before the House Government Reform Committee, February 12, 2004.

to detect outbreaks rapidly. However, CDC's active surveillance program, FoodNet, covers less than 15% of the U.S. population.[32] In addition, the microbial monitoring of food, done at processing plants and ports of entry, is fragmented and is not sufficiently integrated with surveillance to detect pathogens in the food system.[33]

SECURITY RECOMMENDATION

Active surveillance of food-borne illnesses, particularly those caused by pathogens likely to be intentionally introduced, should be expanded more quickly. Ultimately, a nationwide active surveillance program should be instituted by the CDC. Rapid, clinical diagnostic tools for major food supply threat agents should be developed and supplied to practitioners. Results from food sampling and inspection data need to be further integrated into food-borne surveillance systems. This effort, combined with targeted research, should improve Critical Control Point methods to detect food contamination.

[32] GAO, *Food Safety: CDC is Working to Address Limitations in Several of Its Foodborne Illness Surveillance Systems*, GAO-01-973, September 2001.
[33] Food and Nutrition Board, Institute of Medicine, *Scientific Criteria to Ensure Safe Food*, (Washington, D.C.: National Academies Press, 2003).